Transport Canada Transports Canada

TRANSPORTATION IN CANADA 2015

Overview Report

Canada

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Minister of Transport | Ministre des Transports

Ottawa, Canada K1A 0N5

MAY 03 2016

His Excellency the Right Honourable David Johnston, C.C., C.M.M., C.O.M., C.D.
Governor General and Commander-in-Chief of Canada
Rideau Hall
1 Sussex Drive
Ottawa, ON K1A 0A1

Your Excellency,

It is with great pleasure that I submit *Transportation in Canada, 2015*, the annual report on the state of transportation in Canada. This marks the ninth report prepared as required by the *2007 Canada Transportation Act*, Section 52.

This report is based on the most current data and information needed to understand the challenges and opportunities facing Canada's transportation system and its stakeholders. It is complemented with an addendum of useful transportation statistics and figures.

In 2015, the Canadian transportation system continued to play an essential role in facilitating domestic and international trade as well as passenger travel. It also continued adapting to shifting trade patterns toward emerging markets, greater environmental awareness and growing safety concerns.

Going forward, the Government of Canada will work to ensure that Canada's transportation system supports economic growth and job creation while meeting the highest safety and security standards and reducing its impact on the environment.

I hope this report will provide you, Members of Parliament, stakeholders and the general public with useful information on the current state of Canada's transportation system and how it shapes the life of every Canadian.

Sincerely,

The Honourable Marc Garneau, P.C., M.P.
Minister of Transport

Canada

REPORT HIGHLIGHTS

Given slower economic conditions in Canada for 2015, domestic air and intercity rail travel remained essentially the same as last year. A lower Canadian dollar reduced the number of Canadian travelers to the United States (U.S.) by all modes in 2015, but brought more foreign visitors to Canada.

In 2015, the volume of traffic in the Canadian transportation system reflected soft global and national growth, as lower demand for bulk commodities like coal, iron ore and crude oil resulted in declines in total rail freight traffic (in carload and tonnage) and in international waterborne traffic (in value). Coal rail carloads were down 16% while crude oil carloads dropped 24% compared to 2014. West Coast ports also recorded large volume declines for these commodities. In contrast, there was strong growth (in value) for total freight traffic by air, as well as for trucking traffic between Canada and the U.S. The Canadian transportation system did not experience significant bottlenecks with respect to performance or capacity in 2015.

After a period of rising emissions for the road transportation sector, greater fuel efficiency has started to stabilize emissions in recent years, despite increased activity. In 2013 (the latest year for which data are available), this sector continued to account for most (81.5%) transportation-related greenhouse gas (GHG) emissions. Federal regulations have established progressively stricter GHG emission standards for passenger automobile and light trucks of model years 2011 and beyond, and for medium and heavy duty vehicles of 2014 and later model years. Furthermore, various regulatory and voluntary emission reduction measures have taken effect in the air, marine and rail sectors over the years. Continued efforts also helped to ensure vessels operating in Canada contribute to reduced air pollutants.

In 2015, a number of initiatives continued to improve safety and security, as well as accountability for accidents most notably the passage of the *Safe and Accountable Rail Act*, which enhances accountability for rail accidents by strengthening the federal liability and compensation regime for rail. Canada reinforced its strong record of safe and secure marine shipping with measures to improve ship-source oil spill prevention, preparedness and response, as well as liability and compensation. The Minister of Transport received authority to ensure Canadians receive notice of safety defects or non-compliances with their vehicles.

As Canada continues to examine new policy, regulatory and legislative approaches to modernize and strengthen the national transportation system, greater collaboration between levels of government, private sector participants and international partners will be essential. The release of the *Canada Transportation Act* Review's Report in February of 2016 offers a comprehensive platform for engaging Canadians about how federal transportation policy and action can help drive future economic growth, prosperity and global competitiveness. The efficient, safe, secure and environmentally sustainable transportation of passengers and freight remain key to receiving the greatest economic and societal value from Canada's transportation system.

TRANSPORTATION'S ROLE IN THE ECONOMY

A healthy Canadian economy is strongly connected to a well-functioning transportation sector. Transportation provides mobility for people and facilitates the delivery of goods to markets at home and abroad. Transportation contributes to the economy directly through expenditures and employment in the sector and indirectly through derived demand for related goods and services such as fuel or warehousing.

The Transportation Sector

Transportation and warehousing is an important component of the Canadian economy, representing 4.3% of total Gross Domestic Product (GDP) in 2015. This sector grew by 3.1% in real terms in the past year, more than triple the growth rate for all industries.

In 2015, 892,000 employees (including self-employed people) worked in the transportation and warehousing sector, up 1.4% from 2014.

Employment in commercial transport industries accounts for about 5% of total employment, a share that has remained stable over the past two decades. There were approximately 3.6 unemployed persons for every vacant job in the sector, compared to a ratio of 5.7 for the overall economy.

Transportation and the Economy

GDP measures only include the economic activities directly linked to for-hire or commercial transportation. However, transportation is not confined solely to the commercial sector as transport functions are spread throughout the economy as a whole. When viewing the transportation sector in its entirety, the impact is much broader.

On a net basis, approximately 10% of Canada's 2013 (the latest year for which data are available) GDP was produced directly or indirectly from the transportation sector.

In 2015, aggregate household final consumption expenditures on transportation (including insurance) amounted to $172.6 billion – second only to shelter, in terms of major spending categories. Household spending for personal travel accounted for nearly 9% of GDP. Furthermore, government expenditures on infrastructure represented 1% of GDP.

Transportation and Domestic Trade

In 2011 (the latest year for which data are available), 59% of all goods produced in Canada remained within their province and 12% were transported between provinces (the remaining 29% were exported).

Of the produced goods that remained within Canada, over 887 million tonnes were transported by the commercial sector in 2014 (the latest year for which data are available), the highest volume in the last decade. Over 72% of the total freight was carried by for-hire trucking. Rail accounted for 21% of total freight followed by marine at 7%. In terms of value, interprovincial merchandise trade totaled $168 billion (current dollars), up 0.7% from 2013.

Transportation and International Trade

Transportation is an important element of Canada's trade with other countries. In 2015, total international trade amounted to $1,057 billion, a 1.9% increase compared to 2014. The U.S. continued to be Canada's top trade partner, with $685 billion in trade ($400 billion exported, $285 billion imported), up 0.5% from 2014.

In addition to the U.S., Canada's top 5 trading partners in 2015 included China, Mexico, the United Kingdom and Japan. The latter four nations accounted for 16.4% of Canada's total international trade in 2015, while the U.S. represented 64.8%.

PERFORMANCE OF THE CANADIAN TRANSPORTATION SYSTEM IN 2015

The transportation system handled less bulk freight in 2015, reflecting softening economic conditions around the world. The decrease in volumes in some commodities favored the efficient movement of others, particularly containerized goods as well as grain, potash, and wood products. The Canadian transportation system did not experience significant bottlenecks with respect to performance or capacity in 2015.

Moving People

With slower economic conditions in Canada for 2015, domestic air and intercity rail passenger counts remained relatively stable compared to last year.

The demand for international transportation is driven by household disposable income, but also by other factors such as fluctuations in exchange rates, the origin of Canadian immigrants and other countries' GDP. While the lower Canadian dollar reduced the number of Canadian travelers to the U.S. by all modes in 2015, the number of Americans travelling to Canada was on the rise. Residents from other countries, essentially travelling by plane, also recorded increases.

Moving Freight

The national economy and businesses are increasingly integrated in the global economy as production is included in global supply chains. This has an impact on trade flows and on the demand for freight transportation in Canada.

In 2015, the volume of freight traffic in the Canadian transportation system reflected soft global and national growth. The global economic slowdown translated into lower demand for bulk commodities like coal, iron ore and crude oil. Since the oil price peak in June 2014, energy commodity prices have fallen by 70%. Over the same period, non-energy commodity prices have fallen on average by 22%. Use of Canada's marine-rail transportation system remained uneven in 2015, as Canada's trade flows continued to be centered on Vancouver.

Economic Drivers

The Canadian real GDP increased by 1.2% in 2015, down from 2.5% in 2014, recording a small technical recession in the first part of the year as a result of the continued decline of oil prices, but rebounding in the second half of the year.

The U.S., Canada's main trading partner, posted 2.4%[1] growth in real GDP for 2015, the highest since the 2009 recession. This good performance boosted demand for Canadian commodities (e.g., wood products, potash). Growth picked up in the Euro area to 1.6% this year (compared with 0.9% in 2014). Europe is a large market for Canadian exports of precious metals, grain (wheat) and containerized goods.

Asian markets continued to post significant growth in 2015, despite a slowing economic pace in China. China recorded 6.9% growth in 2015, down from 7.3% in 2014, the lowest since 1990. Despite this slowdown, Canada's export value with China increased by 4.6% in 2015, stimulating transportation demand for key bulk commodities (grain and potash) and for containerized goods. Japan, the largest market for Canadian coal, posted a 0.4% growth in 2015 (0% in 2014).

Rail

Overall, rail traffic was down by an estimated 2.8% from 2014, with an observed shift away from bulk commodities towards more containerized goods. Coal rail carloads were down by 16% year over year, and crude oil carloads dropped by 24%, while containers by rail increased almost 6% compared to 2014.

1 Second estimate.

The West Coast remained a key area for the origin and destination of intermodal trains. There was also an increase in intermodal traffic in Atlantic Canada. As a result, use of the mainline rail network remained relatively steady, with a slight decrease in some segments in Western Canada dominated by bulk commodities and a slight increase in some rail segments in Eastern Canada as a result of container movements. Unsurprisingly, rail network utilization was the highest near Port of Vancouver, the Port of Montreal, and through the Greater Toronto Area.

While Western[2] grain supply (production plus carry-forward volumes) was lower in the 2015/16 crop year (August to July) compared to the previous 2014/15 crop year, the volume of Western-produced grain transported along most of the rail and marine network from September through December 2015 was higher than in the previous year, as well as the five-year average for the same months. This implies that volumes are being taken to market sooner in this crop year than seen in the past. Despite low global prices, the Canadian transportation system handled a record amount of potash, estimated at 18.6 million tonnes. Total production and exports of wood products were up by 9% compared to last year, due to rising housing starts in the U.S. and (to a lesser extent) in Canada. As a result, wood products moved by rail grew by 7% in 2015.

After a slight slowdown in rail network velocity in February of 2015, train speeds overall improved in the remainder of 2015, having been positively affected by the declining total bulk commodity carloads and a relatively mild winter.

Ports

Most of the bulk cargo tonnage handled at Canadian ports fell this year compared to 2014, especially for coal, crude oil, and iron ore. Of note, almost 90% of Canada's coal exports now go through Port of Vancouver, with the remaining 10% being shipped through Prince Rupert. Coal volumes through Prince Rupert have fallen by over 60% from their peak in 2012, while coal volumes fell by 8% at Vancouver in 2015, year over year.

Despite the economic slowdown, container volumes increased at all container ports in Canada, compared to last year. Vancouver, Montreal and Halifax all recorded container traffic volume increases above 3%. Growth in container volumes handled at Prince Rupert reached 25% in 2015, buoyed by cargo owners and freight forwarders seeking an alternative to those U.S. West Coast ports experiencing labour unrest and associated delays. Notably, Prince Rupert retained a portion of this traffic after the U.S. West Coast port labour issues were addressed.

The performance of container supply chains in Canada, however, dipped in the first half of 2015 due to this unanticipated spike in import container volumes. It disrupted shipping lines schedules and caused a large drop in vessel on-time performance. This resulted in higher import rail dwell times early in the year (mostly at Port of Vancouver), which returned to normal levels for the second half of 2015 as U.S. West Coast port congestion eased.

Despite this disruption, the relative competiveness of Canada's West Coast ports in terms of end-to-end transit times did not really suffer, since U.S. West Coast ports had even greater performance issues. The average end-to-end transit time was 26 days from Shanghai to Chicago at the Port of Los Angeles/Long Beach and the Port of Seattle/Tacoma, compared to 25 days via Canadian West Coast ports.

At the Port of Montreal, import rail dwell times were more than half a day longer than the three-year average, primarily due to a capacity expansion project at one of the port's terminal yards, and to cold weather that affected both marine and rail operations. Longer dwell times, along with increases in ocean transit times, pushed the average end-to-end transit times of containers moving through Montréal from Antwerp to Chicago by more than 1 day above the 3-year average (18 days versus 16.7).

2 That is, grain produced in British Columbia, Alberta, Saskatchewan and Manitoba.

Trucks

Trade by trucks to and from the U.S. continued to be concentrated in central Canada. In addition, the Greater Toronto Area represents a key intermodal hub for the nation, and the Port of Montreal is an important marine link to Central Canada. Major highways through large urban areas (Toronto, Montréal and Vancouver) continued to face congestion issues.

Border Crossings

Border crossing times, a key indicator of transportation performance with our main trading partner, the U.S., were maintained or improved in 2015 for most border crossings. On average, only 5% of trucks waited more than 30 or 40 minutes southbound at key U.S. border crossings in 2015. However, wait times can be greater than 40 minutes during busy periods at major crossings such as the Ambassador Bridge. These longer and often unpredictable delays are an issue for short-haul trips carrying time-sensitive goods, for instance, automotive parts. While cross-border traffic did increase at some border crossings, overall volumes are still well below the peaks reached in 2001.

Great Lakes St. Lawrence Seaway System

Given its heavy dependence on bulk commodities, approximately 60% of the Great Lakes St. Lawrence Seaway System's capacity continued to be used in 2015 (during peaks in 1999 and 2006 it operated at about 70%). Total tonnage was down by 9% compared to 2014. Shifting trade patterns since the global downturn have caused an imbalance between east and west Seaway movements that affects marine carriers' profitability and could translate into higher costs to shippers in the future.

Productivity in the Transportation Sector

The growth in the transportation sector's productivity as widely outperformed that of the overall economy since the 1980s. In particular, productivity in the rail and air sectors grew by at least 50% between 1986 and 2013, compared with little gain in the overall economy. Productivity improvements have allowed carriers to produce cost savings. Examples include lower prices to consumers in the air sector, and increased financial performance in the rail sector.

Several studies have shown that public infrastructure investments have a major impact on aggregate productivity growth. Annual capital spending on transport approached $30 billion in 2013, a marked increase when compared to around $10 billion in early 2000s. This represented about 10% of the economy's annual capital investment. Of this transport investment, roads account for 80%.

KEY TRENDS SHAPING CANADA'S FUTURE TRANSPORTATION SYSTEM

Looking ahead, Canada's transportation system will have to adapt to a number of fundamental trends including shifting trade patterns, new environmental requirements, evolving security threats, societal changes and technological innovations.

A high-performing economy requires a reliable transportation system. Ensuring alignment of all the elements of the system will help maximize the value of Canada's transportation system for the economy of today and tomorrow.

Looking ahead, key global emerging risks and opportunities are expected to affect the Canadian transportation sector over the medium to long term.

Evolving Economic Conditions, Trade and Transportation Patterns

Despite the soft global economic activity experienced in 2015 (estimated 3.1% GDP growth),[3] growth should be sustained over the next decade, increasing demand for transportation. According to the International Transport Forum, world freight volume will grow by a factor of 4.3 by 2050. Emerging markets will remain the main poles of growth, especially India and developing Asian countries, while China will continue rebalancing toward a domestic/service driven economy.

However, significant risks could threaten global growth including a sharper than expected deceleration in economic growth for China and emerging countries as well as sustained low commodity prices.

Forecast growth in emerging economies is expected to continue to drive transportation demand for key Canadian commodities. This shifting demand has already posed challenges to the accessibility and fluidity of the Canadian transportation system, placing tightened capacity pressures within key trade corridors, particularly in Western Canada.

Specifically, the freight rail system has struggled with seasonal and cyclical demand surges in recent years. In addition, much of Canada's natural resources are located in remote and northern areas, far from main trade corridors. In order to fully benefit from the anticipated growth in demand for commodities, Canada will need to ensure adequate transportation infrastructure, and address bottlenecks to ensure fluid movement of commodities to tidewater and main border crossings.

Emerging economies represent great trade opportunities for Canada; however, North America, (currently the destination for 78% of Canadian exports) is expected to remain Canada's main trading market over the medium-term.

The upcoming expansion of the Panama Canal (scheduled in late June 2016) could also affect transportation patterns. Given that the Canal will allow the passage of larger ships (up to 13,000 TEU (Twenty Foot Equivalent Unit)), some flows of international traffic could shift from the North American West Coast to the East Coast. The increasing size and use of larger vessels in the global fleet requires sufficient capacity at ports. This would, in turn, require matching hinterland connection capacity to ensure the efficient flow of goods along the supply chains.

Changing ice conditions (in particular, a longer ship navigation season) as a result of climate change, could make natural resources in the North more accessible and contribute to increased shipping and new shipping patterns while simultaneously increasing navigational hazards. New resource developments could result in the construction of transportation facilities to serve those developments.

3 International Monetary Fund, World Economic Outlook, January 2016.

Changing ice conditions could also encourage growth in cruise tourism. Increased shipping activity could amplify requirements for incident prevention, preparedness and response capacity as well as environmental protection measures.

Given current weak global growth, more transportation sector restructuring is anticipated in the short-term as the industry will be seeking further cost efficiencies and may have to reconsider decisions about strategic supply chains. This could affect where facilities are located, which may lead to increased competition among ports to become major hubs and ultimately transform the geographical patterns of transportation.

Evolving Society

The growing population of Canadian seniors will affect the nature of passenger transportation in the foreseeable future by increasing the need for more flexible and accessible transportation at both the local and national level. In 2036 the population aged 65 years old and over is expected to reach 24%, up from 16% in 2015. Urbanization in Canada is expected to reach 88% in 2050 up from 81% today while population growth in Canada is expected to lead to a population increase of 7 million people over the next 20 years. These trends could result in increased urban congestion which will support the demand for public transportation.

As an aging population leads to more workers retiring, skills shortages will likely be an issue moving forward. The need to recruit, retain and train workers in the transportation sector, especially in the marine and trucking industries, will increase as competition for skilled employees grows.

The development of transportation infrastructure faces increasing challenges due to the need to obtain social license, particularly in major transportation hubs featuring dense population and competing land use. For instance, some marine ports face mounting pressure with respect to air, water and noise pollution, as well as pressure to convert waterfront properties to condominiums. Furthermore, views and considerations on development vary across the country. As traffic is likely to trend upwards going forward, capacity expansion projects could prove difficult to achieve without obtaining public support.

Evolving Risks

Growth in volumes of transported goods, as well as the changing nature of cargo are expected to pose new or increasing risks to the system. For example, lithium batteries, omnipresent in commercial and consumer goods, have a documented risk of spontaneous combustion, making them a dangerous good, particularly when transported in bulk on aircraft. Such evolving risks highlight the need for careful proactive assessment of risks to maximize safety. At the same time, public scrutiny of the risks posed by transportation will require effective consultations, response and oversight in order to ensure public confidence.

Terrorism poses ongoing threats as the transportation system remains a possible target for attacks. Because of the interconnectedness of international transportation systems, Canada can be affected by terrorist activity, even if Canada is not the specific target. Therefore, carriers must become more agile and resilient to improve supply chain reliability in the face of such shocks.

Evolving Environmental Issues

In 2013, GHG emissions from transportation accounted for 23% of Canada's total emissions. Although increased efficiencies, particularly in the on-road passenger sector, will lead to reductions in overall transportation emissions, transportation will continue to rely primarily on fossil fuels over the next decade. This, along with rising demand, means that the transportation sector must be a key contributor to national emission reduction targets established in the context of the Paris Conference of the Parties (COP21). As such, the sector is likely to face pressures to reduce its emission footprint, which will drive the deployment of low-carbon solutions and of modernized, energy-efficient supply chains.

Key factors shaping these outcomes will be the implementation of more stringent GHG emission regulations for new on-road vehicles, the implementation of carbon pricing mechanisms, transportation infrastructure investments, and the further evolution of low-carbon and smart transportation technologies.

Growing international maritime shipping and aviation will also be shaped by the development of standards and approaches for reducing their environmental impacts.

At the same time, impacts associated with the changing climate and more frequent extreme weather events will continue to affect transportation systems, services and operations across Canada. To effectively mitigate such risks, there is a need to address knowledge gaps, facilitate the assessment of potential risks and vulnerabilities to the transportation system and strategic assets, support the development and implementation of promising adaptive solutions, and build capacity. In addition, there will be a need for rapid responses to re-open and rebuild the transportation system as extreme weather events become more common, given that Canadians rely on the system to move people and goods.

Environmental considerations can also have an impact on the domestic and international energy sector with significant consequences for transportation demand of coal and crude oil. In the case of crude oil, social acceptability and environmental assessments can also impact the choice of transportation modes and industry efficiency.

Evolving Technologies

Changing vehicle technologies, including automated and connected vehicles, and unmanned air vehicles, are challenging established regulatory regimes. It is likely that global vehicle manufacturers will continue developing a portfolio of powertrains, including fuel efficient internal combustion engines, battery electric vehicles and plug-in-hybrids. These new technologies will potentially increase the efficiency and the safety of the system while changing the way we monitor the usage of transportation infrastructure (e.g. congestion) and collect transportation data. However, the pace of technological developments will demand new policies, programs and regulatory frameworks that remove barriers to growth while continuing to ensure high standards for safety and security.

Potential Implications on Decision Making

Over the past two decades, we have seen an acceleration of the global forces that have put increased pressures on and created additional challenges for the Canada's transportation system. Canada's ability to compete in the global market and prosper in the long term will require anticipatory vigilance in surveying the distant horizon.

These driving forces that could most significantly affect the transportation system over the next 25 years will require transportation decision makers to:

- Strengthen coordination and planning among the key players in the transportation sector, to maintain an effective and reliable transportation system;
- Optimize current capacity to address congestion issues and concerns;
- Consider new investments required to maintain and further develop capacity in the transportation system, to seize new trade opportunities with emerging poles of economic growth and to meet passenger needs and expectations in the context of demographical changes;
- Manage risks created by evolving safety issues and security threats, and factor them in when planning supply chain investments; and,
- Address climate change concerns by reducing the environmental footprint of the transportation sector.

As Canada continues to examine new policy, regulatory and legislative approaches to modernize and strengthen the national transportation system, greater collaboration between levels of government, the private sector participants and international partners will be essential. The release of the *Canada Transportation Act* Review's Report in February of 2016 offers a comprehensive platform for engaging Canadians about how federal transportation policy and action can help drive future economic growth, prosperity and global competitiveness.

TRANSPORTATION SYSTEM AND INFRASTRUCTURE

Canada's transportation system is composed of key corridors, infrastructure and networks that provide the backbone for moving passengers and freight.

Moving freight plays an essential role in facilitating domestic and international trade in Canada (see Map 1). Goods move along three main corridors:

Western Corridor

The Western corridor, the busiest rail and marine transportation corridor in Canada, carries large quantities of bulk commodities to West Coast ports for export, widely destined to Asian markets (mainly China, Japan and South Korea). This corridor is also an important link for container imports from Asia to Central Canada, as well as to the U.S. Midwest markets.

Port of Vancouver is the port with the highest traffic volume in Canada. Key bulk commodities (coal, crude oil, wood products, potash and grain) and container traffic continued to play an important role for Port of Vancouver as they generated about 80% of traffic (metric tonnes) in 2015, with coal and containers respectively representing 25% and 18% of the traffic. The Port of Prince Rupert, mainly handled container (39%), grain (32%) and coal (23%) traffic.

In 2015, $103 billion worth of exports (excluding pipelines to the U.S.) were shipped through this corridor.

In 2015, Vancouver International Airport handled 20% of Canada's air freight traffic.

Continental Corridor

Central Canada is the most densely populated and industrialized region in Canada. It is also an important hub for channeling freight through the Continental corridor.

On the marine side, the Great Lakes St. Lawrence Seaway portion of the corridor is predominantly used for bulk materials and for transshipments for exports. In 2015, grain represented the most important transported commodities (close to 30% of tonnage). Grain from the Prairies is typically shipped from the Port of Thunder Bay and carried to different Québec ports along the St. Lawrence River, where it is transshipped for export to the U.S. and Europe.

The St. Lawrence River portion of the Corridor handled growing container traffic in 2015. The Port of Montreal, a major hub for container traffic, mainly served Québec, the Toronto area and the U.S. Midwest.

Iron ore produced in Northern Québec also accounts for a large share of the traffic in this corridor. This commodity is handled at Port Cartier and Sept-Îles and destined to Central Canada heavy industries and to exports to Asia and Europe. Coal and petroleum products also account for a notable share of traffic.

Trucking activity is also heavily concentrated along the Québec-Windsor corridor, primarily moving food products, manufactured and other processed goods. This corridor is key for freight moved by truck and rail to and from the U.S.

Ontario and Québec have the busiest rail and road border crossings in Canada, as more than 80% of merchandise value exported to the U.S. by these modes exited these provinces. In 2015, the total value of merchandise shipments moved through Ontario and Québec totaled $318 billion (excluding pipeline exports). Key exports included automotive products and parts, wood products, and metal/minerals.

The Québec-Windsor corridor also accounts for a large share of air cargo transportation. Toronto (Pearson), Hamilton and Montréal (Trudeau and Mirabel) are very active in cargo shipping and together accounted for close to 55% of air freight traffic in Canada in 2015. This cargo is mostly destined to the U.S., the United Kingdom and China.

Atlantic Corridor

The Atlantic Corridor is strategically located to access global markets as it is North America's closest point to Europe. Containers account for an important part of the traffic, predominantly transiting through the Port of Halifax. Containers handled at the Port of Halifax mainly serve the rest of Canada and the U.S. Midwest. Petroleum products (crude and refined) also represent a large portion of traffic in this corridor, notably at the Port of St. John's (Newfoundland and Labrador), which handles shipments of offshore oil destined to European markets but also to domestic refineries of Come By Chance, Newfoundland and Labrador and Saint John, New Brunswick.

In 2015, $26 billion worth of merchandise was exported through the Atlantic corridor (excluding pipeline exports).

Airport System

The Canadian Airport System moves passengers and freight across the country and around the world. It includes:

- 26 airports, shown on Map 2, forming the National Airport System (NAS):
  - Calgary
  - Charlottetown
  - Edmonton
  - Fredericton
  - Gander
  - Halifax
  - Iqaluit
  - Kelowna
  - London
  - Moncton
  - Montréal/Trudeau
  - Montréal/Mirabel
  - Ottawa
  - Prince George
  - Québec
  - Regina
  - Saint John
  - Saskatoon
  - St. John's
  - Thunder Bay
  - Toronto
  - Vancouver
  - Victoria
  - Whitehorse
  - Winnipeg
  - Yellowknife
- 71 regional and local airports serving scheduled passenger traffic;
- 31 small and satellite airports without scheduled passenger services;
- 13 remote airports providing the only reliable year-round transportation link to isolated communities; and
- 11 Arctic airports (including the three territorial capital airports counted already in the NAS).

The Canada Flight Supplement and the Canada Water Aerodrome Supplement listed 1,961 certified and registered sites in 2015, divided into three categories:

- 336 water bases for float and ski planes;
- 401 heliports for helicopters; and
- 1,224 land airports for fixed-wing aircraft.

NAV Canada is a privately run, not-for-profit corporation that owns and operates Canada's civil air navigation system. It operates air traffic control towers at 42 airports and flight service stations at 56 airports.

In 2015, the Canadian Air Transport Security Authority (CATSA) screened 57.3 million passengers and their belongings departing 89 Canadian airports, including the 26 NAS airports.

In April 2015, Transport Canada transferred approximately 4,700 acres of the Pickering Lands to the Parks Canada Agency to realize the Rouge National Urban Park. In July 2015, the transfer of an additional 5,000 acres was announced and should be completed by the end of fiscal year 2017-18. Transport Canada kept 8,700 acres of land for a potential future airport and is undertaking regulatory amendments that will designate a new airport site and restrict land uses in the area, to ensure safe operations of a future airport.

Marine System

The Canadian Port System

Ports and harbours offer vital connections to promote domestic and international economic activity. As of December 2015, there were 559 port facilities, and as of 2013 (the latest year for which data are available), there were 902 fishing harbours and 202 recreational harbours in Canada.

Specifically, three categories of ports fall under the National Marine Policy:

- 18 independently managed Canada Port Authorities (CPAs), shown on Map 3:
  - Belledune
  - Halifax
  - Hamilton
  - Montréal
  - Nanaimo
  - Oshawa
  - Port Alberni
  - Prince Rupert
  - Québec
  - Saguenay
  - Saint John
  - Sept-Îles
  - St. John's
  - Thunder Bay
  - Toronto
  - Trois-Rivières
  - Vancouver
  - Windsor
- 29 regional/local ports; and
- 21 remote ports remaining under Transport Canada control.[4]

In May 2015, the Prince Rupert Port Authority's Road, Rail & Utility Corridor was completed, unlocking new terminal throughput capacity and access to foreign markets for Canadian exporters. This $97-million project was funded by:

- The Governments of Canada and British Columbia, who each contributed $15 million;
- Canadian National (CN), who gave $30 million;
- Canpotex, who gave $15 million; and
- The Prince Rupert Port Authority, who paid the remaining amount.

The Great Lakes St. Lawrence Seaway System

As shown on Map 3, the Great Lakes St. Lawrence Seaway System provides a strategic waterway system into the North American heartland that includes:

- The waterway between Lake Erie and the Port of Montreal (the St. Lawrence Seaway), with eight locks in the Welland Canal and seven locks between Montréal and Lake Ontario. This portion of the system (including five of the seven locks between Montréal and Lake Ontario) is managed by the Canadian St. Lawrence Seaway Management Corporation; and
- The two remaining locks in the Montréal – Lake Ontario segment are in U.S. waters and are managed by the Saint Lawrence Seaway Development Corporation.

The Great Lakes St. Lawrence Seaway System serves 15 major international ports and 50 regional ports that connect to more than 40 provincial or interstate highways and 30 railway lines.

Rail System

As illustrated on Map 3, the Canadian Rail System currently has 45,200 route-kilometres (km) of track:

- CN owns 49.1% (22,205 km);
- Canadian Pacific (CP) owns 25.7% (11,600 km); and
- Other railways own 25.2% (11,395 km).

The Rail System also includes:

- 19 intermodal terminals operated by either CN or CP to run truck/rail and container intermodal services; and
- 27 rail border crossings with the U.S.

4 As of December 2015, a total of 499 of the 549 Transport Canada port facilities across Canada had been transferred, demolished or had their public harbour status terminated.

Railway rationalization continued in 2015. In the last 10 years (2006-2015), 2,700 km of track were officially abandoned and 3,657 km transferred, mainly to new shortline rail operators. CN has acquired some track with takeovers of Class II carriers.

VIA Rail operates intercity passenger rail services, mainly over CN and CP track.

Road Network

There are more than 1.3 million two-lane equivalent lane-kilometres[5] of public road in Canada. Approximately 34% of the road network is paved, while 66% is unpaved. Four provinces – Ontario, Québec, Saskatchewan, and Alberta – account for over 77% of the total road length.

In 2014 (the latest year for which data are available), the National Highway System (NHS)[6] included over 38,000 lane-kilometres (3.7% of the public road network), of which:

- 72.7% was classified as Core routes;
- 11.8% as Feeder routes; and
- 15.5% as Northern and Remote routes.

As shown on Map 2, the NHS consists mainly of interprovincial and international road linkages. In 2014 (the latest year for which data are available), the NHS accounted for nearly 40% of vehicle-kilometers travelled.

Two important highway projects were completed this year:

- The Rt. Honorable Herb Gray Parkway opened to traffic in the Windsor area in November 2015. Canada provided up to $764 million towards the $1.4 billion project. The parkway extended Highway 401 to the site of the future Canadian inspection plaza and bridge crossing of the Detroit River in west Windsor, Ontario.
- The Queen Elizabeth II Highway and 41 Avenue Southwest Intermodal Access project in Alberta was completed in autumn 2015. The Government of Canada contributed up to $75 million out of $205 million through the Asia-Pacific Gateway and Corridor TransportationInfrastructure Fund. The Queen Elizabeth II Highway is an important north-south provincial highway on the NHS that is used by commuters and commercial carriers for moving commercial goods between regions. The interchange, just south of Edmonton, Alberta, will improve connections between different modes of transportation, improve rail and road traffic flows, and facilitate economic development and international trade with Asia-Pacific countries.

5 A lane-kilometre measures the number of traffic-lanes on each section of road.

6 The NHS was first established in 1988 as a result of federal-provincial-territorial cooperative study, and was comprised of 24, 459 kilometers across Canada.

AIR TRANSPORTATION SECTOR

Passenger traffic at Canadian airports in 2015 grew at the slowest rate in the last six years. Freight loaded and unloaded increased in terms of tonnage by 7.2% and the value of international air cargo trade grew strongly by 9.6%. The year 2015 recorded an increase of fatalities in the air transportation sector, but remained lower than the 2010-2014 five-year average.

Industry Structure

In Canada, the air transportation sector is focused on the high-speed transport of passengers and high-value, time-sensitive goods, over long distances.

In December 2015, there were 770 Canadian air operators (aeroplane and helicopter) operating domestic and international air services. There were also 245 Canadian Private Operators. Private operations consist of a person or corporation that operates an aircraft for the transport of passengers; these operations are not conducted for hire or reward and are not publicly available.

In 2015, a total of 6.2 million aircraft movements occurred at airports, of which 3.6 million were made by airlines. The other 2.6 million were itinerant and local movements made by general aviation companies.[7]

Air Canada

In 2015, Air Canada, Air Canada Express[8] and Air Canada rouge accounted for 54% of available seat-kilometres in the domestic air market, roughly the same percentage held since 2011.

Air Canada, Air Canada Express, and Air Canada rouge operated on average 1,579 scheduled flights per day. The Air Canada network has three hubs (Toronto, Montréal and Vancouver) and provided scheduled passenger services to 63 Canadian destinations, 53 U.S. destinations and 77 other foreign destinations on five continents.

As of December 2015, Air Canada had a fleet of 205 aircraft, while Air Canada Express was using 164 aircraft, and Air Canada rouge operated 39 aircraft.

WestJet

In 2015, WestJet and WestJet Encore accounted for 37% of available seat-kilometres in the domestic air market, the same percentage held in 2014.

WestJet and WestJet Encore operated on average 580 scheduled flights per day. They provided scheduled passenger services to 38 Canadian destinations, 25 U.S. destinations and 35 destinations in the Caribbean and Mexico. In December 2015, WestJet had a fleet of 116 aircraft, while WestJet Encore recorded a fleet of 24.

Other Carriers

In 2015, Porter Airlines, a regional carrier based at Toronto's Billy Bishop airport, used a fleet of 26 turboprop aircraft to provide direct, non-stop scheduled passenger services to 15 destinations in Canada and nine in the U.S.

Air Transat was the largest leisure carrier in Canada for 2015, with a fleet of up to 33 aircraft (depending on the season) serving 69 international destinations in 28 countries.

Sunwing Airlines is Canada's second largest leisure carrier. They operate a fleet of up to 32 aircraft (depending on the season) serving 40 international destinations in 16 countries.

Foreign operators offered 12.7 million scheduled seats from Canada on an average of 308 flights per day. This is a decrease of 2.6% from the 13.0 million seats offered in 2014.

As of December 2015, Canada had air transport agreements or arrangements covering 115 countries. In 2015 alone, Canada concluded a number of expanded air transport agreements with key bilateral partners. For instance, Canada expanded its agreements with Cuba (ranked Canada's 3rd largest air travel market based on 2014 data), China (5th largest market) and Australia (16th largest market). In addition, Canada signed a previously-negotiated expanded agreement with Israel.

7 General aviation includes the following sectors: other commercial, private, and government (civil and military).

8 Air Canada Express is comprised of Chorus (Jazz), Sky Regional, Exploits Valley Air Services and Air Georgian.

Passenger Traffic

In 2015, Canadian airports reported an estimated 131 million enplaned and deplaned passengers, similar to last year, comprising:

- 78.4 million on domestic services;
- 25.6 million on services between Canada and the U.S.; and
- 27.0 million on other international services.

Between 2005 and 2015, total air passenger traffic (enplaned and deplaned passengers) grew by 38%, or 3.3% per year on average. Of note, 2015 saw the slowest rate of growth (0.3%) in passenger traffic of the last six years.

In 2015, around 90% of the total air passenger traffic was handled at the 26 NAS airports, with record-breaking traffic experienced by the top three airports. With 39 million passengers (4% annual growth), Toronto Pearson International Airport was the busiest airport, accounting for 29% of passenger traffic. Vancouver International followed with 19 million passengers (1.6% annual growth), accounting for 15% of passenger traffic. Montréal-Trudeau International ranked third with 14 million passengers (1.4% annual growth), covering 11% of traffic.

Over 12 million U.S.-bound passengers per year are precleared by U.S. customs at Canada's eight largest airports. Once the new bilateral land, rail, marine and air preclearance agreement signed in 2015 comes into force, expansion of preclearance to all modes will become possible.

Freight Traffic

In 2015, Canadian and foreign air carriers at Canadian airports loaded and unloaded an estimated 1.2 million tonnes of freight, up 7.2% from 2014. The value of Canada's international air cargo trade in 2015 amounted to $128.1 billion, an increase of 9.6% over 2014.

High-value commodity groups carried by air were mainly machinery and electronic equipment, aircraft material, precious minerals/stone, and pharmaceutical products.

Environment

In 2013 (the latest year for which data are available), domestic aviation emitted 7.6 megatonnes (Mt) of carbon dioxide equivalent (CO_2e), accounting for 4.5% of transportation-related GHG emissions. Over the 2000-2013 period, domestic aviation's GHG emissions decreased by 2.9% despite increased passenger traffic, due mainly to improved aircraft design and operations as well as the introduction of new aircraft. The sector has been improving aviation fuel efficiency through voluntary measures under signed agreements with the Government of Canada since 2005. The latest agreement (signed in 2012) is Canada's Action Plan to Reduce Greenhouse Gas Emissions from Aviation.

Compared with 2013, Canadian air carriers improved fuel efficiency by 3.0% in 2014, which represents a 1.4% average annual improvement from a 2005 baseline or a cumulative improvement of 11.6% from 2005 to 2014.

Safety and Security

In 2015, Canada continued to take steps to facilitate the flow of legitimate air travelers and goods while maintaining Canada's high level of aviation security. The Minister of Transport enabled non-designated airports to purchase CATSA screening services to support their economic development plans.

More than 1,500 new and modified aeronautical products built or operated in Canada were certified in 2015. The demand for aeronautical product certifications is expected to grow in the coming years as Canada currently ranks third in terms of global civil aircraft production. This production is forecasted to grow twice as fast as the global market during the 2014-2021 period, due in large part to its entrance into the large jet market.

In 2015, 206 aviation accidents (under *Canadian Aviation Regulations*) involving Canadian-registered aircraft were recorded, down 6% from the 2010-2014 five-year average. These accidents caused 35 fatalities, an increase when compared to 13 fatalities in 2014. However, this was lower than the previous five-year average of 47.

MARINE TRANSPORTATION SECTOR

More than 60% of passengers traveling on international cruise ships transited through the Port of Vancouver in 2015, with Halifax in second place. International waterborne trade value decreased by 2.6% in 2015.

Industry Structure

In Canada, the marine sector transports bulk and containerized cargo domestically and overseas. This sector also includes Northern resupply and resource development. Passengers use the marine mode through coastal ferry services and cruise ships.

Canadian registered vessels are active in domestic commercial activities (carrying on average 98% of domestic tonnage) as well as in transborder trade between Canada and the U.S.

Canadian shippers rely on foreign-based carriers for most international marine movements. Canadian registered vessels only carried about 0.1% of Canada's international (non-U.S.) marine traffic in 2011 (the latest year for which data are available).

A number of Canadian-based marine companies are active in international trade using foreign registered vessels. The main ones are Fednav Ltd., CSL Group (Canada Steamship Lines), Teekay Shipping (Canada), Canfornav and Kent Line.

Domestic shipping serves four main geographical sectors:

1. The Pacific Coast

Most West Coast marine activity is trade-related, with Port of Vancouver and Port of Prince Rupert being the two main gateways for international trade. Nevertheless, domestic marine activities play an important role in British Columbia's economy. The Pacific Coast geographic area is very diverse and includes many inlets and islands. Coastal communities located across this complex island shoreline rely on domestic tug and barge operations.

Domestic marine carriers serve:

- the Fraser River and Burrard Inlet
- the coastal routes within the Gulf Islands
- the Strait of Juan de Fuca
- the inside Passage from Vancouver up to the Alaska Border, and
- the Haida Gwaii's archipelago.

Main carriers serving this sector are:

- Seaspan Marine
- Island Tug and Barge
- Pacific Towing Services
- SMIT Canada
- West Coast Tug and Barge

These carriers are also active in transborder trade to the states of Alaska, Oregon and Washington. Freight carried in this sector includes general cargo for community resupply, wood products, gravel and stones, construction materials and coal.

2. The Great Lakes and the St. Lawrence River

Domestic marine activity in the Great Lakes - St. Lawrence River covers a large area from its western point at Thunder Bay/Duluth (U.S.) through the Great Lakes and the Seaway System, ending at the opening of the Gulf of St. Lawrence.

Main domestic carriers in this sector are also active in transborder trades with the U.S. They include:

- Algoma Central Corporation
- Canada Steamship Lines
- Groupe Desgagnés Inc.
- Lower Lakes Towing Ltd.
- McAsphalt Marine Transportation Ltd.
- McKeil Marine Ltd.
- Purvis Marine Ltd.

Freight carried in this area includes grain, coal, iron ore, petroleum products, salt, gravel and stones.

3. The Atlantic Coast

While most of the East Coast's domestic marine activity takes place within the 4 Atlantic provinces, some occur with The Great Lakes – St. Lawrence River.

Most of the activity is related to the petroleum industry located in Saint John (New Brunswick), in Come by Chance (Newfoundland and Labrador), and at Newfoundland and Labrador's current offshore oil project sites – Hibernia, Terra Nova, and White Rose. Newfoundland and Labrador is also resupplied in general commodities via different daily and weekly feeder services.

Main domestic carriers in this sector include:

- Irving/Kent Line
- Coastal Shipping Ltd.
- Oceanex (1997) Inc.
- Canada Steamship Lines
- Groupe Desgagnés Inc.

Offshore operations in this region and transborder trades with the U.S. also contribute to marine activity. However, international marine carriers conduct most of this activity.

4. The Northern Region

There are also four distinct marine systems involved in resupplying northern Canadian communities:

- The Athabasca marine resupply system (A. Frame Contracting Ltd.);
- The Mackenzie River and western Arctic system (Northern Transportation Co. Ltd. and Cooper Ltd., Island Tug and Barge);
- The Inside Passage and Yukon system (Seaspan Marine); and
- The Keewatin/Hudson Bay and Eastern Arctic system (Woodward, Nunavut Eastern Arctic Shipping Inc., Nunavut Sealink and Supply Inc., Desgagnés Transartik/PetroNav).

Ferries

Ferries in Canada provide an important transportation link for coastal and island communities, as well as for communities separated by rivers or lake crossings where crossing demands do not warrant building a bridge. Ferries also play a vital role in resupplying some communities across the country. There are ferry operators in most provinces such as Marine Atlantic Inc., Northumberland Ferries Ltd., Société des traversiers du Québec, and BC Ferries in British Columbia.

The Canadian Fleet

In 2015, the Canadian registered fleet (1,000 gross tonnage and over) had 189 vessels[9] with a total of 2.6 million gross tonnes. The dry bulk carriers formed the fleet's backbone, with 52% of the gross tonnage and 37% of vessels, followed by tankers and general cargo vessels.

There was also an extensive active fleet of 340 tugs (15 gross tonnage and over) and 1,130 barges (15 gross tonnage and over) operating in Canada, mainly on the Pacific coast.

9 Self-propelled vessels of 1000 gross tonnage and more. This includes dry bulk vessels, tankers, general cargo vessels and ferries (including government-owned ferries). It excludes tugs used in offshore supply.

Passenger Traffic

In 2015, international cruise ships carried close to 1.34 million passengers at major Canadian ports, up 0.9% from 2014, mainly in Vancouver (805,400 passengers), Halifax (222,300) and Québec City (122,000). BC Ferries, Canada's largest ferry operator, recorded carrying 6.4 million vehicles and 16.7 million passengers on various routes, representing an increase of 4.4% and 4.0% respectively from 2014.

Freight Traffic

In 2015, Port of Vancouver was Canada's busiest port, handling 138.2 million tonnes of freight, where 70% were bulk commodities (coal, grain, basic minerals, fertilizers, wood products and petroleum products), 18% were containerized goods and 12% was breakbulk. Overall, 3.05 million TEU were handled at Port of Vancouver in 2015. Montreal, which is the second busiest port, handled 32.0 million tonnes in 2015, with 1.44 million TEU.

The value of Canadian international waterborne trade was $205 billion in 2015, down 2.6% from 2014. In terms of value, the most important commodities carried by water were crude petroleum, gasoline and fuel, as well as grain and agricultural products.

Environment

In 2013 (the latest year for which data are available), the domestic marine sector emitted 5.5 Mt of CO_2e, or 3.2% of transportation-related GHG emissions. Over the 2000-2013 period, domestic marine GHG emissions increased by 3.0%. The increased use of larger, more efficient vessels during this period was offset by an increase in total tonne-kilometres.

In July 2015, the Government of Canada and Port of Vancouver announced funding of about $6 million for shore power for container vessels at two Port of Vancouver container terminals. The shore power technology reduces fuel consumption, fuel costs, GHG and air pollutant emissions from vessels by providing ship operators an alternative to running diesel auxiliary engines. The Government of Canada and Montreal Port Authority also announced funding of $5 million to install shore power at the Port of Montreal in July 2015.

In 2013, Canada adopted a number of measures to reduce air pollutant and GHG emissions from ships, developed at the International Maritime Organization (IMO).

Since January 1, 2015, under the North American Emission Control Area in coastal waters, vessels operating in Canada have been required to use fuel with a maximum sulphur content of 0.1% or use technology that results in equivalent sulphur emissions, to reduce air pollutants. In the Great Lakes St. Lawrence Seaway System, progress continued under the Fleet Averaging Regulatory Regime to reduce sulphur emissions from domestic vessels. These measures are expected to reduce sulphur oxide emissions from ships by up to 96% from 2013 levels.

The Energy Efficiency Design Index requires vessels on international trade that were constructed after January 1, 2015 to meet energy efficiency targets to reduce GHG emissions.

To protect waters from invasive species, Canadian and U.S. Authorities have continued joint inspections to verify that all vessels from overseas entering the Seaway meet ballast water regulations. They found that 97% of vessels were compliant with the remainder requiring corrective action before entering the Seaway.

Safety and Security

Canada has a strong record of safe and secure marine shipping. Given the thousands of ships that operate in Canadian waters, there are relatively few accidents. In 2015, there were 202 accidents involving Canadian registered vessels, down 17% from 2014. There were also 40 foreign registered vessel accidents reported in Canadian waters in 2015, down 31% from 2014. There have been 179 commercial marine fatalities reported in Canada over the 2006-15 period, including 22 in 2015.

Improving this record includes responding to changing technologies, to an evolving and growing industry, as well as to environmental concerns and climate change. For 2015, new measures to improve safety and security of seafarers include:

- *Regulations Amending the Vessel Operation Restriction Regulations;*
- *Regulations Amending Certain Department of Transport Regulations Concerning Marine Safety and Security (Miscellaneous Program);*
- Security Measures respecting Tall Ships and Marine Facilities that interface with Tall Ships; and
- The Mandatory Code for Ships Operating in Polar Regions (the Polar Code), adopted by the IMO – the culmination of over six years of formal negotiations to establish minimum safety and environmental standards for ships operating in the Arctic and Antarctic. Canada leveraged its 40-plus years of Arctic shipping regulatory experience to support this international effort.

Since 2012, the federal government has taken measures to improve ship-source oil spill prevention, preparedness and response, and liability and compensation in Canada. In 2015, new announcements and measures included:

- The independent Tanker Safety Expert Panel's report, "A Review of Canada's Ship-source Preparedness and Response: Setting the Course for the Future, Phase II: Requirements for the Arctic and for Hazardous and Noxious Substances Nationally" released in April 2015. A total of 42 recommendations were provided related to the Arctic and hazardous and noxious substances, with an additional recommendation related to casualty management;
- An investment of $22.7 million over five years to improve marine safety in the Arctic that includes increased surveying of key Arctic shipping routes, identification of enhancements to the Arctic marine navigation system, and increased Arctic search and rescue capacity;
- The launch of the $2.1 million Community Participation Funding Program to enable participation by local communities and Aboriginal Groups in the Area Response Planning (ARP) Pilot Project. ARP is a regional, risk-based planning approach to ship-source oil spills that engages a broad range of stakeholders in the development of area response plans. Pilots are being conducted in four higher-traffic areas:
  1. The Straits of Georgia and Juan de Fuca, British Columbia
  2. The Bay of Fundy, New Brunswick
  3. The Strait of Canso, Nova Scotia, and
  4. The St. Lawrence River, (Montréal to Anticosti Island), Québec.
- Funding ($3.7 million) to help launch and establish the Clear Seas Centre for Responsible Marine Shipping. The Centre will support the Government of Canada's commitment to protect Canada's coasts and to enhance marine safety by providing credible, independent information on the safe marine shipping and handling of oil and liquefied natural gas on a national basis.

As a core member of the Marine Security Operations Centres (MSOCs), Transport Canada continues to partner with federal government departments and agencies to leverage the capability, capacity and authority to enhance marine security. This is accomplished through collaborative detection, assessment and warning, thereby supporting responses to threats that challenge Canada's security.

RAIL TRANSPORTATION SECTOR

The total volume of freight moved by rail was down in 2015 while rail passenger traffic remained stable. Furthermore, a number of measures were implemented to advance safety and accountability in the rail industry.

Industry Structure

The rail transportation sector specializes in moving heavy, bulk commodities and containerized traffic over long distances. Its passenger function is focused on urban transit and VIA Rail's corridor service.

Over 40 federally regulated railways currently operate in Canada, including four Class I[10] railways:

- CN;
- CP;
- Quebec North Shore and Labrador Railway (QNS&L) is a wholly-owned subsidiary of Iron Ore Co. of Canada. It offers freight services between Labrador City, Emeril Junction and Sept-Îles; and,
- VIA Rail is a Crown corporation established in 1977. It operates Canada's national passenger rail service on behalf of the Government of Canada.

AMTRAK provides passenger rail services throughout the U.S. as its national railroad passenger corporation in addition to providing cross-border passenger rail services to Montréal and Vancouver; and a joint cross-border service to Toronto with VIA Rail.

Other railways fall into one of two categories:

- Short line railways are line-haul carriers that provide point-to-point haulage services typically across distances of between 20 and 450 kilometres, though some have shorter or longer networks. Short lines typically connect shippers to Class I railways, other short lines and/or ports to move products across longer distances. Some short lines also provide passenger rail services;
- Some large U.S.-based carriers have freight rail operations in Canada, for example the BNSF Railway Company and CSX Transportation Inc.

In terms of equipment, Class I railway carriers had close to 2,800 locomotives in 2014 (the latest year for which data are available), with 51,600 freight cars (mainly hopper cars, boxcars, flatcars and gondolas).

Passenger Traffic

VIA Rail's annual passenger traffic remained stable at 3.82 million in 2015 (growth of 0.4% since 2014) after reaching a peak of 4.6 million passengers in 2008.

In 2015, 182,000 Canadian and American citizens used rail carriers to cross Canada/U.S. border points, similar to 2014 (up by 0.8%).

Freight Traffic

Total rail[11] freight carried in 2015 was an estimated 300.5 million tonnes, down 2.8% from 2014.Most rail freight consisted of bulk commodities.

The railways transported a record 573,000 carloads of grain produced across Canada during the 2014-2015 crop year, a 2.3% increase compared to 2013-2014. So far in 2015-2016 (August to February), there have been almost 330,000 carload movements of grain, a 1.9% decrease compared to the same period in 2014-2015.

The number of crude oil rail carload movements decreased by approximately 24% in 2015 compared to 2014, reaching around 147,000 carloads (preliminary estimate). Crude oil carloads accounted for about 3% of total carloads in 2015.

10 In Canada, Class I rail carriers are railway companies that realized gross revenues of at least $250 million for the provision of rail services in each of the last two calendar years.

11 Including both federally regulated and provincially regulated railways that interchange with a federally regulated railway.

In 2015, the value of rail international trade traffic amounted to $127.4 billion, up 1.0%. This included rail exports of $83.6 billion and imports of $43.8 billion. The main commodities by export value were automotive products, chemical products, forest and metals. On the import side, automotive products and chemical products were most significant.

Environment

In 2013 (the latest year for which data are available), the rail sector emitted 7.3 Mt of CO_2e or 4.3% of transportation-related GHG emissions. Freight operations accounted for 98% of rail GHG emissions. Despite efficiency improvements, rail GHG emissions in 2013 increased by 8.5% compared to 2000, due to significant increases in freight activity.

In 2013, Transport Canada and the Railway Association of Canada renewed a memorandum of understanding to encourage voluntary emission reductions from the Canadian rail sector during 2011-2015. In 2015, this memorandum of understanding was extended until the end of 2016. The latest annual report published under this memorandum shows that the intensity of GHG emissions from rail freight operations in 2013 improved by 5.1% compared to 2012. In addition, Transport Canada and the U.S. Environmental Protection Agency are working with key stakeholders to develop a Canada-U.S. Voluntary Action Plan to Reduce Greenhouse Gas Emissions from Locomotives.

Safety and Security

In 2015, there were 1,145 recorded railway accidents, down 6% from 2014. These accidents caused 45 fatalities, 69% less than the average over the last 8 years.

In 2015, a series of legislative and regulatory changes advanced safety in the rail industry. For example:

- Amendments to the *Railway Safety Act* came into force, giving the Minister of Transport new authorities, and broadening railway inspectors' existing authorities;
- New regulations came into force, such as:
  - the *Railway Operating Certificate Regulations*;
  - the *Railway Safety Administrative Monetary Penalties (AMPs) Regulations*;
  - amendments to the *Transportation Information Regulations, 2015*; and
  - the *Railway Safety Management System Regulations, 2015*.

In response to Transportation Safety Board recommendations on the accident at Lac-Mégantic, Transport Canada approved additional requirements to the *Canadian Rail Operating Rules* (CROR) related to securing railway equipments. This makes permanent the requirements of the Emergency Directive previously in place.

Safety in the transportation of dangerous goods was also strengthened across Canada, through:

- Increased oversight resources to support more frequent inspections of high risk sites related to the transportation of dangerous goods;
- Regulations to update and clarify reporting requirements to enable the efficient collection of data and improve risk analysis related to dangerous goods incidents;
- A new tank car standard for the transportation of flammable liquids by rail. The new tank standard responded to recommendation from the Transportation Safety Board. This standard was jointly developed with the U.S. to ensure the seamless transportation of flammable liquids by rail between the two countries given the integrated nature of the North American rail system;
- A Safety Awareness Strategy that includes a Transportation of Dangerous Goods Safety Awareness Kit with information for first responders and for municipalities, that also brings together the elements of emergency response and information sharing;
- A research project to assess the properties of crude oils that are transported by road and rail in Canada. This work was made public in December 2015; and

- Action on one third of the recommendations received from the Emergency Response Task Force created by the Transport Minister to bring together stakeholders (e.g. Transport Canada, municipalities, railways, first responders) to strengthen emergency response capacity across the country to incidents involving flammable liquids. Approval was given to a management action plan with specific timelines to address the remaining recommendations.

To enhance accountability for rail accidents, the *Safe and Accountable Rail Act* (Assented to in June 2015) strengthens the federal liability and compensation regime for rail. Once it comes into force, it will amend the *Canada Transportation Act* to ensure that sufficient funds are available to adequately compensate potential victims, pay for clean-up costs and protect taxpayers through:

- risk-based minimum insurance levels for federally regulated railways ranging from $25 million to $1 billion;
- clearly defined railway liability, including liability without the need to prove fault or negligence for accidents involving crude oil and any other goods designated by regulation; and,
- a shipper-financed supplementary compensation fund for accidents involving crude oil or other designated goods in which the costs exceed a railway's insurance level.

In response to recent terrorist attacks in various countries against rail transportation that targeted rail passengers, Transport Canada increased the number of security inspections it conducts at major passenger rail and urban transit stations in some of Canada's largest cities. Likewise, since international sporting events are often targets for terrorist attacks, Transport Canada proactively conducted additional security inspections at busy passenger rail and urban transit stations in Canada's host cities of the 2015 FIFA Women's World Cup, and in Toronto, for the 2015 Pan Am / Parapan Am Games.

ROAD TRANSPORTATION SECTOR

Road transportation is Canada's largest transportation sector in terms of freight tonnage and value. In 2015, truck-related trade growth with the U.S. was above 10% for the second consecutive year. After a period of rising GHG emissions for this sector, greater fuel efficiency has started to stabilize emissions despite increased activity in recent years.

Industry Structure

Road transportation carries the most passengers and goods in Canada. It is particularly important for the transport of manufactured goods.

As of December 2015, there were 65,921 businesses whose primary activity was trucking transportation. Trucking includes many small for-hire carriers and owner-operators, and some medium and large for-hire companies that operate fleets of trucks and offer logistic services.

Trucking companies were concentrated in four provinces: Ontario (41.5%), Alberta (16.2%), Québec (15.1%), and British Columbia (14.2%).

The trucking industry can be divided into three main types of trucking activities.

1. For-hire trucking services, which fall into two main categories:
   - Less-than truckload (LTL), i.e. the transportation of relatively small-sized freight from different shippers in a truck, and
   - Truckload (TL), i.e. transportation of a shipment from a single shipper in a truck.
2. Courier operators, which specialize in transporting parcels. As of December 2015, there were 11,969 companies with courier services as their main line of business.
3. Private carriers, where businesses maintain a fleet of trucks and trailers to carry their own goods (e.g., Walmart, Costco). These carriers' activities are not tracked, as they are part of companies whose main line of activity is not trucking.

Trucking companies can also be classified as intraprovincial or extraprovincial (i.e. ones that routinely cross provincial or international boundaries).

Owner operators are independent business people (e.g. drivers) who own or lease their trucks/ road tractors and haul goods for either a private (e.g., manufacturer, retailer, wholesaler) or a for- hire carrier.

In 2014 (the latest year for which data are available), more than 23.5 million road motor vehicles were registered in Canada, up 2.3% from 2013. Most (92.3%) were vehicles weighing less than 4,500 kilograms (mainly passenger automobiles, pickups, Sport Utility Vehicles (SUV) and minivans), while 4.4% were medium and heavy trucks weighing 4,500 kilograms or more, and 3.3% were other vehicles such as buses, motorcycles and mopeds.

Passenger Traffic

In 2015, around 55 million two-way passenger vehicle movements were recorded at Canada/U.S. border crossings, down 12% from 2014. The decline is entirely due to an 18% reduction in Canadian vehicles crossing. American vehicles crossings increased by over 7%. Despite that, over 70% of all passenger vehicle movements were from Canadian registered vehicles.

In 2014 (the latest year for which data are available), public transit systems carried 2.07 billion passengers, an increase of 1.1% over 2013.

Freight Traffic

In 2014 (the latest year for which data are available), for-hire trucking traffic amounted to 276.2 billion tonne-kilometres, up 9.9% from 2013. Around 40% of that traffic involved an international movement.

In 2015, around 10.6 million two-way trucking movements were recorded at Canada/U.S. border points, similar to the traffic observed in 2014. Over 68% of these movements were related to Canadian registered trucks.

The value of trucking traffic between Canada and the U.S. totaled $410 billion in 2015 ($206 billion for exports and $204 billion for imports), up 10.5% from 2014. The same commodities dominated both exports and imports: automotive products, machinery and electrical equipment, other manufactured products, and agricultural products.

Environment

In 2013 (the latest year for which data are available), the road transportation sector emitted 138.8 Mt of CO_2e, or 81.5% of transportation-related GHG emissions and 19.1% of total Canadian GHG emissions.

From 2000 to 2013, road transportation GHG emissions grew by 14.6%. This increase comes from:

- growth in passenger and freight activity;
- a shift of activity towards more GHG intensive modes of transportation (i.e., larger vehicles such as SUVs and light trucks with more powerful engines); and
- a continuing predominance of carbon intensive fuels.

GHG emissions from on-road freight vehicles increased by 37.3% between 2000 and 2013, from 35 to 49 Mt. Over the same period, road freight activity, measured in tonne-kilometres, also increased by around 37%.

GHG emissions from on-road passenger vehicles increased by 5.2% between 2000 and 2013, from 86 to 90 Mt. Over the same period, road passenger activity, measured in passenger-kilometres, increased by around 17%.

Federal regulations have established progressively stricter GHG emission standards for passenger automobile and light trucks of model years 2017 and beyond, building on the existing standards covering model years 2011 to 2016.

In 2014, the Government of Canada announced its intent to further regulate GHG emissions for post-2018 model year heavy-duty vehicles and engines, building on the first ever regulations covering model years 2014 to 2018.

Safety and Security

In 2015, authority for the Minister of Transport to order a company to issue notices or subsequent notices of defect or non-compliance came into force under the *Motor Vehicle Safety Act*. This helps to ensure that Canadians will receive notice of safety defects or non-compliances with their vehicles onward.

In 2015, Canada upgraded the Motor Vehicle Safety Regulations with several new and updated regulations. For example:

- A new requirement was introduced for multifunction school activity buses, which is a type of bus having the same safety features as a school bus, but without the traffic control systems;
- Updated regulations for Controls and Displays and Motorcycle Braking will improve driver safety.

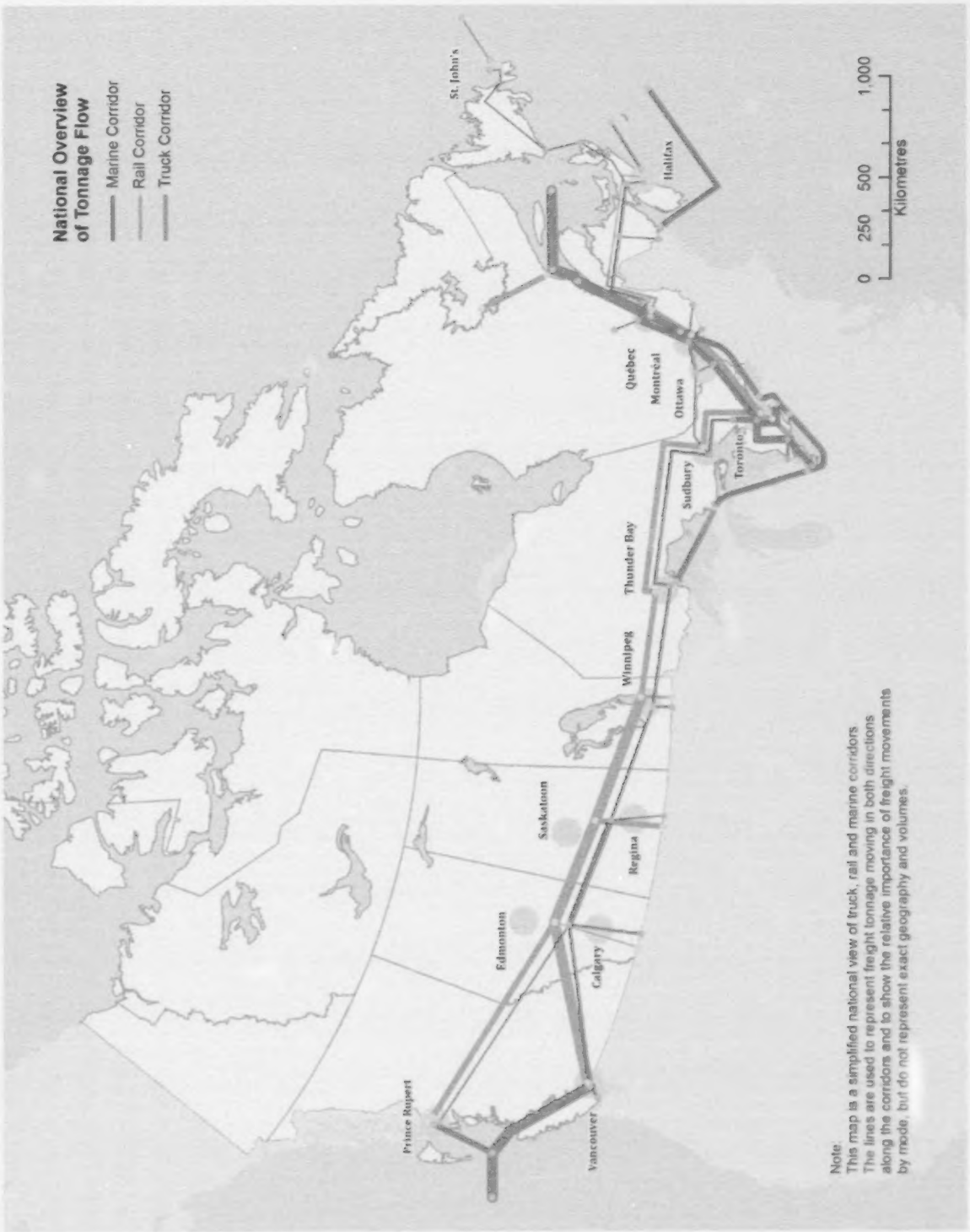
Over the last 10 years (2005-2014, 2014 being the latest year for which data are available), road casualty collisions[12] decreased by 24%, although more vehicles were on the road. The fatality rate[13] decreased from 1.5 to 0.8 over that period.

In 2015, manufacturers issued 624 recalls: tires, child car seats and 6.29 million vehicles were recalled.

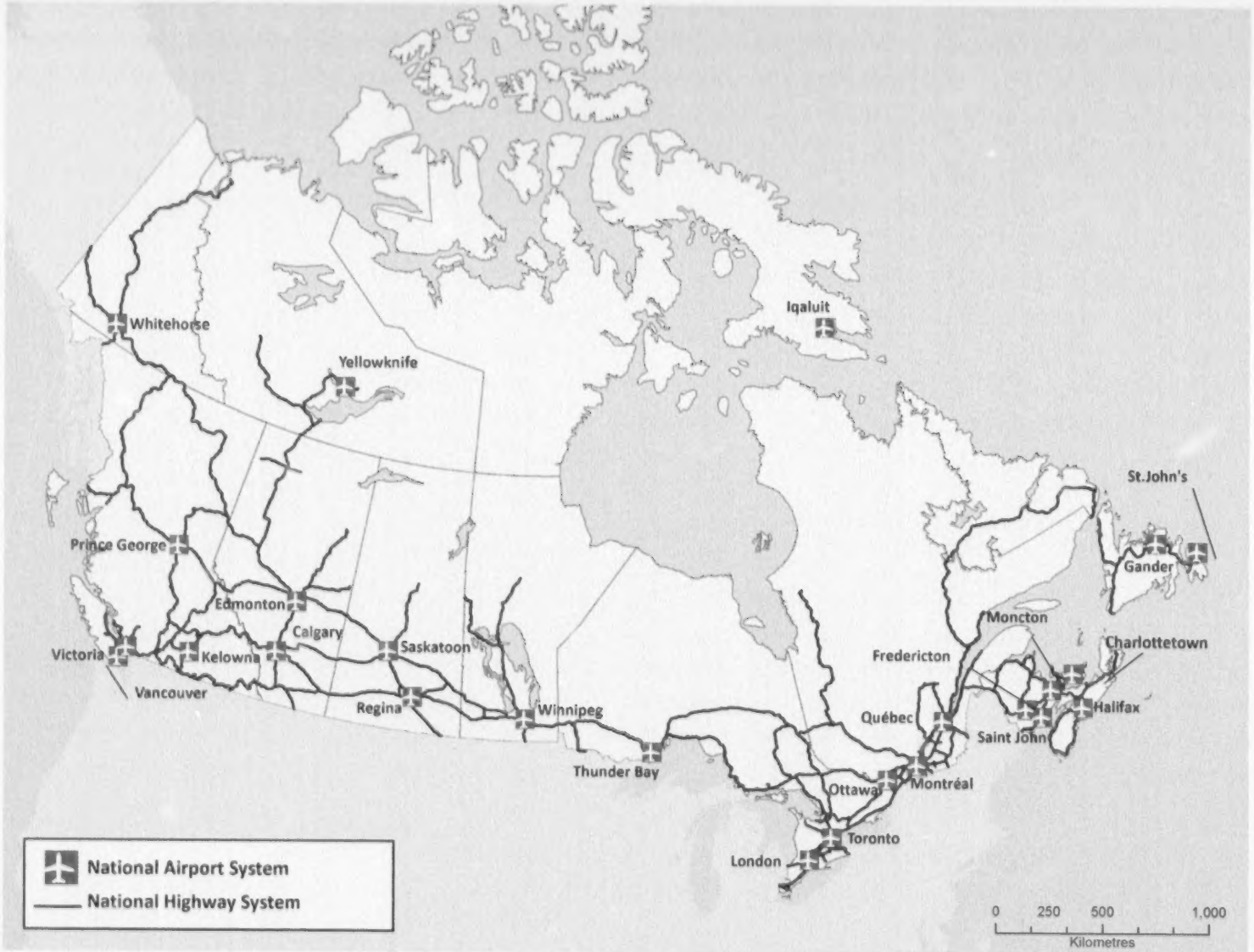
12 Collisions with fatalities and injuries.

13 Dead person in a reportable traffic collision per 10,000 motor vehicle registrations.

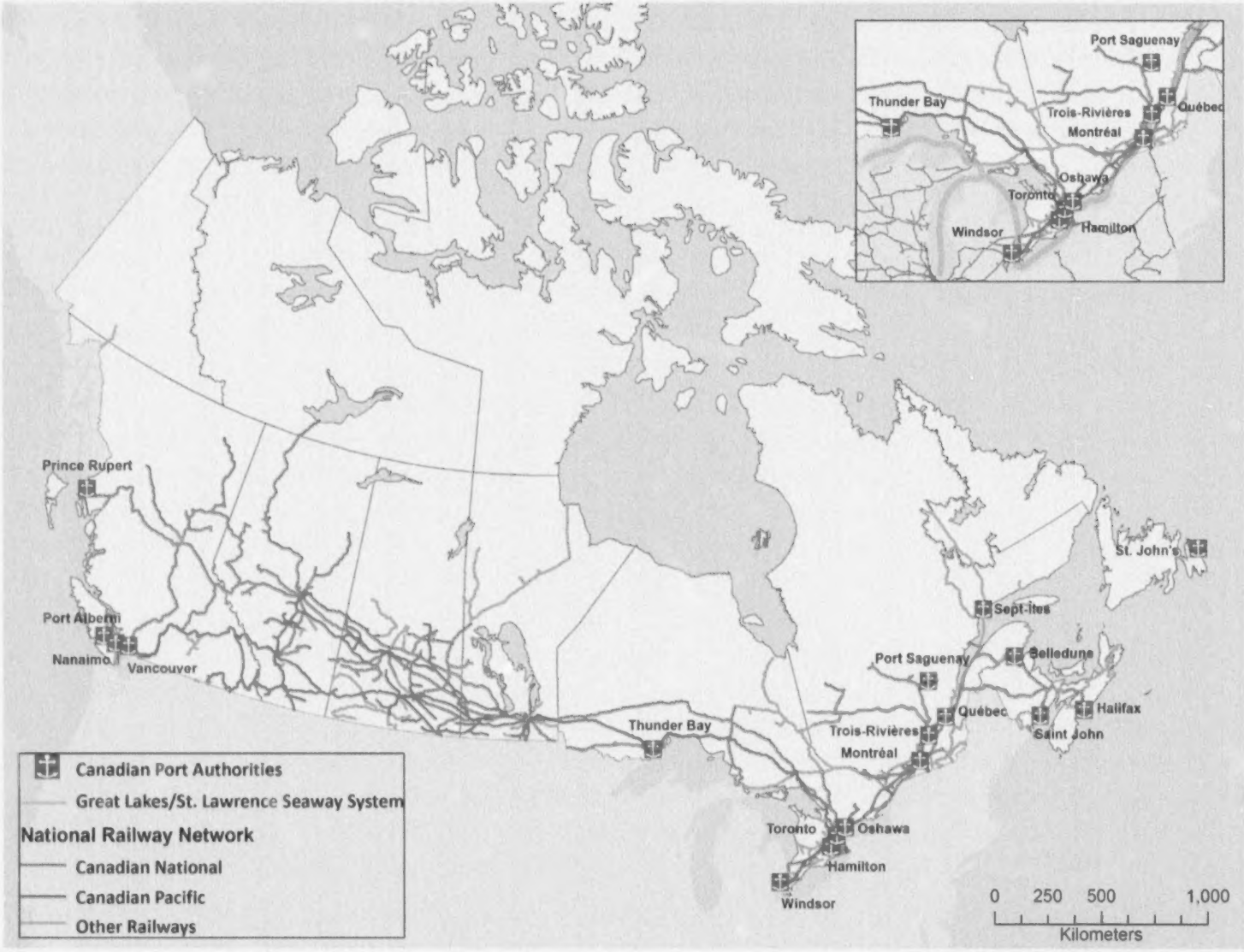
Map 1: Freight Transportation Corridors



Map 2: Air and Road Infrastructure



Map 3: Marine and Railway Infrastructure



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